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FAO TRAINEES
MEASURE RICE YIELDS
(SEE ARTICLE ON PAGE 112)

Foreign Agriculture

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FRONT COVER

FAO Trainees Measure Rice Yields

At the FAO Agricultural Statistical Sampling Centre in Thailand, trainees weigh each bundle of rice and record the result. They are intent on determining the exact yield of each test plot—a step

in one of their projects that is part of an international program to increase the productivity of rice. (Photo courtesy of FAO.)

BACK COVER

U. S. Cacao Bean Imports Decline As Wholesale Prices Rise

U. S. imports of cacao beans dropped 9 percent last year when world prices reached an all-time high.

NEWS NOTE

U.S. Foods at German Fair

United States manufacturers of food products will have a chance, come the first week of October, to exhibit their goods at the international ANUGA Food Fair in Cologne, Germany. Plans are under way for an organized U. S. exhibit to be sponsored jointly by U. S. agricultural trade groups and the U. S. Department of Agriculture.

This fair, held every other year, is recognized as the leading exposition in Europe for manufacturers and sellers of foodstuffs. Already 13 countries are scheduled to be represented; 10 others are negotiating to be. About 6,500 square feet of floor space has been set aside for U. S. exhibitors.

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FOREIGN AGRICULTURE

ALICE FRAY NELSON, EDITOR

A monthly publication of the Foreign Agricultural Service of the United States Department of Agriculture, Washington, D. C. The matter contained herein is published by direction of the Secretary of Agriculture as administrative information required for proper transaction of the public business. The printing of this publication has been approved by the Director of the Bureau of the Budget (October 28, 1953). Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 15 cents per copy, or by subscription at the rate of \$1.50 per year, domestic; \$2.00 per year, foreign. Postage stamps will not be accepted in payment.

Foreign Agricultural Service Observes 25th Anniversary

On June 5, 1955, the Foreign Agricultural Service completes a quarter of a century of service as the foreign arm of the United States Department of Agriculture.

The original Foreign Agricultural Service was established on June 5, 1930, by the 71st Congress as part of the former Bureau of Agricultural Economics. Its purpose was that of "encouraging and promoting the agriculture of the United States and assisting American farmers to adjust their operations and practices to meet world conditions."

The era was one of mounting surpluses of U.S. farm products. A primary function of the Service was to aid U.S. farm exports. Agricultural attachés and commodity marketing specialists were dispatched far and wide to report back on foreign marketing opportunities and competition and in other ways to assist U.S. agricultural trade.

On June 30, 1939, the Foreign Agricultural Service gave way to a new Office of Foreign Agricultural Relations, and the Department's agricultural attachés were transferred to the Foreign Service of the Department of State. OFAR continued to represent the Department in foreign matters, including collecting and issuing information on foreign agricultural production and markets and conducting research on foreign demand for U.S. farm products. OFAR operated largely in a wartime and rehabilitation atmosphere. Comparatively little stress was placed on trade promotion.



Asher Hobson, who directed the work of Foreign Agricultural Service, 1930-31.

By 1953, however, U.S. surpluses were accumulating once more to such an extent that emphasis on foreign market promotion had to be restored. On March 11, 1953, there was brought back to the Department today's Foreign Agricultural Service, greatly strengthened, and not only representing the Department in foreign affairs but also working aggressively at helping American agriculture sell its products to foreign customers. To further facilitate this work, the following year the agricultural attaché activity was returned to FAS, from where it again is being directed.

In this, its 25th anniversary year, FAS has status as one of the leading agencies of the Department. It is carrying out four principal activities:

Foreign market development, a broad program to develop foreign outlets for U.S. farm products and to analyze competition and demand factors affecting U.S. agricultural



Gwynn Garnett, who directs the work of Foreign Agricultural Service, 1955.

trade. It includes administration of export promotion programs, as well as import programs and controls.

Foreign trade and analysis, a program of analysis and interpretation of world developments that affect the holding and expanding of U.S. agricultural markets abroad.

Agricultural attachés, a program wherein U.S. agricultural attachés are stationed in all principal market and production centers of the world, where they encourage trade in American farm products and furnish agricultural economic intelligence.

Assistance to FOA, by participating in the agricultural portion of foreign assistance programs with funds from the Foreign Operations Administration. This includes coordination of the Department's participation and direction of the training program in the U.S. for foreign agricultural leaders.



Opening the cacao pods and removing the beans is a job for the whole family in West Africa.

Cacao—From Pod to Port

by JAMES F. GEHR



We have been using less chocolate in the past 1½ years than we used to—not because demand is shrinking but because cacao supplies have been lower and prices have been higher.

An abnormally low world cacao crop in 1953-54 and increased demand in Europe combined to drive prices of cacao beans sky-high and United States imports down. Between July 1953 and July 1954, average monthly wholesale prices of cacao beans rose nearly 80 percent. As a result, our imports dropped 9 percent last year and our chocolate consumption decreased 13 percent.

The smaller supply of chocolate has probably not been apparent to the average consumer. In making confections, which account for more than half of the chocolate, manufacturers have largely offset the smaller supply by substitutions and other economies. They have substituted compound coatings for chocolate in candy bars. In such coatings, they have replaced cocoa butter, the fat constituent of cacao beans, with vegetable hard fats. They have made candy coatings thinner and used colored

(summer) coatings on a year-around basis. And they have reduced the weight of 5¢ and 10¢ bars and actively promoted the sale of non-chocolate-bearing confections.

The future does not promise substantially increased supplies of cacao beans, which means that manufacturers may make further changes. Already, research groups in both industry and government are working to further perfect a compound coating and even to develop a wholly synthetic chocolate.

Why do shortages exist in cacao when so many other crops are going begging for markets? Much of the answer lies in the way cacao is produced.

Most of the world's cacao comes from West Africa—principally from the Gold Coast, Nigeria, the French Cameroons, and the Ivory Coast. There, it

Mr. Gehr, Agriculturist, Sugar and Tropical Products Division, FAS, returned in December from a trip through West Africa, where he went to find out what supplies of cacao will be available to United States importers and chocolate makers in the years to come. This article is based on what he observed there and on trade information.

is the product of a peasant agriculture, treated not as a crop to be nourished and improved but as a forest product to be exploited.

Cacao farms are generally small in size, irregular in pattern, and widely scattered. Trees are planted at random and given no care. Hence, diseases and pests easily gain a foothold and, with the passing years, become a major factor limiting production.

The Cacao Tree

When mature, the cacao tree is usually between 15 and 25 feet high. It generally comes into bearing when it is 5 years old and into full production when it is 10 to 15, maintaining maximum production for about 20 years more, depending on the soil, climate, and other conditions.

The cacao tree is strictly a tropical plant, thriving only in a hot rainy climate, which restricts its cultivation to countries situated between latitudes 20° N. and 20° S. It seems to grow best under shade and thus finds a natural home in the tropical forests of West Africa. Like most other tropical trees, it puts forth new shoots, commonly referred



Black pod fungus of cacao. Disease cuts sharply into the cacao production of West Africa, the largest producing area in the world.

to as growth flushes, several times each year. The new leaves are pale rose or yellowish green, but soon change to light green and then to dark green. Flowers, very small and somewhat star shaped, are borne in little clusters on cushions that arise directly on the trunk and older branches. From these cushions a succession of flowers is produced for many years. Flowering is profuse but fruiting is scanty. Usually, flowering is heaviest in two periods, which result in the two principal harvesting seasons.

The fruits, or pods, mature about 5 months after the flowers have been pollinated. The pods are melon- or cucumber-shaped, anywhere from 5 to 10 inches long and 3 to 5 inches in diameter; their unusual arrangement along the trunks and branches gives the tree a somewhat artificial appearance. The coloring of ripe pods varies from yellow orange to reddish purple. Each pod contains between 30 and 45 almond-shaped seeds, which when fermented and dried are the cacao beans of commerce.

Harvesting

Most of the pods are removed from the tree with a cutlass. Those on the highest branches are cut off with a curved knife blade fastened to the end of a long pole. Harvesters generally cut only the ripe fruit and try to avoid injuring the fruit-bearing cushion. With some variation, the main crop, which accounts for the greater part of the annual output, is harvested continuously from October to March and the mid crop, from April to September. Yields range between 300 and 400 pounds of dry cacao beans per acre, but they vary widely depending on tree age and population per acre, soil, rainfall, presence of disease and pests, and other factors.

Preparing the Beans

The cacao-pod husk is thick and not easily opened. But I saw many a cutlass-wielding West African slice into one pod after another until he had opened the harvest from a dozen trees without ever injuring a cacao bean. Beans that are cut or crushed must be discarded. Sometimes pods are opened by hitting them with a stone or a short wooden stick or by cracking two of them together. In West Africa, however, the cutlass is the favored opener.

The beans, in their slimy white coatings, are scooped out of the pod, usually by hand, and then fermented.



These young tribesmen of the Ashanti region of the Gold Coast stir cacao beans, drying on fiber mats that rest on bamboo trestles. Drying goes on almost all year long in West Africa.

Fermentation lessens the bitter taste and the astringency of the beans and changes their color from purple or violet to brown or cinnamon. It also develops the essential oil that gives chocolate its characteristic aroma. And it helps remove the slimy coatings and toughens the seed coat so that it is less likely to break during drying.

Cacao beans are fermented in many ways in West Africa, but the oldest, simplest way is perhaps most widely used. A grower covers a well-drained piece of ground on his farm with banana leaves and piles the beans on the leaves in a cone-shaped heap. Then he covers the heap with more banana leaves, and lets the beans ferment for about 6 days. The beans should be stirred or turned every couple of days, but he does not always do this.

In recent years, some farmers in the French Cameroons and the Ivory Coast have been fermenting their cacao beans in boxes, slit or perforated along the bottom to help drain off the liquids. The boxes permit easy stirring of the beans and can be readily covered when it rains.

After the beans have fermented, they are dried in the sun. In the Gold Coast, the fermented beans are generally carried in baskets to the village, where they are spread thinly on bamboo mats placed on the ground or, preferably, on bamboo trestles. Elevating mats permits better air circulation and keeps the dogs, goats, and chickens off the beans. At night and when it rains, the mats are rolled up and covered with palm fronds. In the French Cameroons, many farmers have built drying houses, with Government supervision. These houses contain layers of trays on bamboo runners, which speeds the moving of the beans into the sun and out of the rain.

To obtain even, uniform coloring, farmers generally turn the beans frequently during the day. They also devote considerable time to picking over the beans in order to remove foreign matter and flat, broken, and germinated beans.

With reasonably favorable weather, the drying process usually takes 10 to 14 days. Favorable weather is highly important to obtaining good-

quality dry beans. Continued rain, particularly in the first days of drying, greatly increases the degree of mold. In drying, the loss in weight is about 50 percent. Cured beans have a moisture content of 5 to 6 percent.

Storing and Marketing

In an area like West Africa with a humid climate and inadequate storing facilities, cacao beans deteriorate rapidly. But generally speaking West African farmers rarely store their cured cacao beans unless they anticipate a change in price. In the Gold Coast and Nigeria, prices are set at the beginning of each season, but, in the French Cameroons and the Ivory Coast, they vary throughout the season in accordance with the fluctuations of the world market.

If the cacao beans are stored for any length of time in the living quarters, they take on a smoky flavor, which of course is undesirable. In the French Cameroons the Government is encouraging the farmers to build sheds for temporary storage of beans.

In the Gold Coast and Nigeria, all cacao beans are purchased by marketing boards, established by law. They are purchased at fixed prices under a program of price stabilization to protect the producer from the fluctuations of the world market price. The actual purchase, collection, storage,

movement to port, and loading aboard ships for export are accomplished by licensed buying agents. These agents do not always buy directly from the farmer, for he sometimes sells his beans through a broker (middleman) or a cooperative society if he belongs to one. Agents may be qualified individuals, firms, or cooperative marketing associations, whose stores and assistants form a network throughout the countries. The marketing board pays the agents a fixed allowance to cover their expenses and a reasonable margin of profit.

Sales of Gold Coast and Nigerian cacao beans to consuming countries are handled by a subsidiary firm of the marketing boards in London.

In the French Cameroons and the Ivory Coast, cacao beans are purchased by the local agents of exporting firms, who in turn may buy from middlemen with sub-buyers. A free, competitive market

(Continued on page 118)



Drying cacao in specially built houses like this one in the French Cameroons is being encouraged by the Government.



In much of West Africa, cacao beans are moved from the villages to the buying stations by canoe and head load.

FAO: Cooperation for Productivity and Peace

By P. V. CARDON

The Food and Agriculture Organization of the United Nations (FAO) is only one of many channels through which international cooperation flows these days. But it is an important channel, made even more important by present world conditions: through it passes a kind of cooperation that nourishes a sound economy, rooted deep in the soil, from which can grow the enduring peace that man forever dreams about and hopes some day to realize.

The invitation from the editor of this magazine to contribute an article on the recent progress of FAO affords me a welcome opportunity to stress the advantages that are available, through cooperation, to member nations in FAO. Many of these advantages are especially fresh in my mind, for I have recently come back from a round-the-world trip, in the course of which I visited for about a week in each of several countries—Egypt, Lebanon, Syria, Iraq, Pakistan, India, Burma, Thailand, the Philippine Republic, and Japan. My purpose was to learn what are the major problems in the field of FAO's interest, what is being done about them, and what still needs to be done; and I talked with leaders both in and out of government, including representatives of private foundations and many other agencies cooperating with FAO.

Similarity of Problems

Everywhere I went I had difficulty in realizing I was away from home, because the problems confronting these leaders are fundamentally the same as those I had known during my more than 40 years of association in agricultural research activities in the United States. These new friends of mine all talk about familiar things—soil, water, animals, forests, and fisheries; cropping systems, farm management, crop improvement, and animal breeding; storage, processing, and distribution of farm products; costs and prices; producer organizations, such as cooperatives; disease and insect control; nutrition and home economics. In short, they face the same problems that people face everywhere when

they seek to conserve and utilize their natural resources in order to have adequate food, clothing, and shelter.

Often I thought of what has been done in the United States to solve these problems. A great many of our solutions have come from abroad. By one means or another we have derived from other parts of the world the plant materials that now constitute about three-fourths of our big crops. All our major breeds of livestock have come from other countries and been bred to suit our needs. Many of our agricultural techniques are adaptations of those developed elsewhere. Hybrid corn, for example, has resulted from our adapting to farm production a principle discovered by an Austrian monk and contributed to by other scholars from many countries.

Different Circumstances

But, in those countries I visited, when we came to consider what is being done to solve the common problems, I found myself on less familiar ground. There, dense populations are seeking to do what we have done or are doing, but they are seeking under entirely different circumstances, deriving from many causes.

The differences include the fact that these peoples have used their land for thousands of years in contrast to our few hundreds. They include the fact that their holdings are tiny patches or strips in contrast to the larger, more economic holdings that I have been accustomed to. They include political, social, and economic complexities resulting from generations of struggle to survive in the midst of war, conquest, and domination; the understandable deterrents of tradition, custom, and belief. Yet, despite these differences, two hopeful facts appear: the people know what is being done in

Dr. Cardon is Director-General, Food and Agriculture Organization of the United Nations.

other countries to attack these various problems, and they display determined interest in doing likewise.

How do they know about these things? Rather, how can they *fail* to know? They are intelligent people, they have an ever-increasing access to educational facilities, and their literacy levels are rising. Their leaders are broadly educated and well informed. Couple these facts with what has been taking place in the world during the last half century in transportation and communication, and we are bound to have an intimate mingling of people and events. Besides, what has already been accomplished in these countries in the way of agricultural development has served to open thoughtful minds and seeing eyes to still clearer vision of the greater tasks to be accomplished. Already new horizons are appearing and plans are being made to reach them.

Each developing country is of course largely responsible for the progress it is making, since it itself has the interest, the desire, and the determination. But never before in the history of the world have so many kindly hands been extended across the seas and over national boundaries to help others make a better life for themselves. These hands have worked through bilateral programs, through international agencies like FAO, and through foundations, church organizations, civic groups, and others, many of them with the assistance of private enterprise. I could cite many specific instances of progress that have resulted from this intergovernment, interagency association in worldwide cooperative effort; but I shall confine myself rather to some broad types of cooperation, with a few examples of each.

(Continued on page 124)



An FAO expert in curing and tanning hides examines, with one of Tripoli's leading tanners, some fine skins that have been grown and cured under regulations and methods recently adopted in Libya under FAO guidance.

Some time soon, United States agricultural trade may find itself doing substantially all its business in Argentina with cooperatives, since President Perón has indicated that he wishes the cooperatives to carry on a large part, perhaps the bulk, of the country's commerce.

Economic Influence of Cooperatives in Argentina

For decades, Argentina's cooperatives have exerted considerable influence on the country's agricultural and trade policy, and continue to comprise, at least potentially, a highly influential economic group. And during the past few years, the cooperative movement has been greatly stimulated by the Government.

The membership of cooperatives comprises a substantial part of the total population, and the cooperatives possess large resources. Their actual operation, however, is limited and controlled by various laws, decrees, and regulations. So long as they cooperate among themselves, and between themselves and the Government, the cooperatives are able to make an impact on the economy.

From 1946-47 to 1951-52, subscribed capital in cooperative organizations quadrupled, reserves increased from 17 million pesos to 72 million (\$3.4 million to \$14.4 million)¹, and business transactions rose from 582 million pesos to 2,305 million (\$116.4 million to \$461 million). During this period the number of cooperatives increased from 1,009 to 1,760, and the number of members from 544,064 to 871,088. The distribution of membership by area has been about in line with that of population and resources.

The cooperative movement in Argentina is nearly 100 years old. Much of the early development came in agriculture and was fostered by the principal agricultural associations.

Under the Rural Society, one of the most important groups of cooperatives was developed. The influence of this group was very great until recent years, for its membership had a large part of the country's wealth and many of its members were politically dominant figures. Recently, the Rural Society has cooperated closely with the Govern-

ment; nevertheless, it is not so influential as it once was.

The Confederation of Rural Associations of Buenos Aires and the Pampa, organized in 1932, was for a number of years an influential agricultural organization. During recent years, however, the confederation found itself in opposition to various Government policies and, in January 1955, had its charter revoked by the National Government.

The Argentine Agrarian Federation is at present the most influential of the three, and cooperates closely with the Government. It represents small farmers, especially tenants.

Today, Argentina has 17 cooperative federations in operation, all of which are about to be organized into one confederation that will represent cooperatives in the General Economic Confederation. The three outstanding cooperative groups are the Argentine Cooperative Association, the Federation of Ar-

Expansion of Cooperatives in Argentina

	1946-47		1951-52	
	Units	Members	Units	Members
Crop products ..	170	55,177	459	155,379
Cotton	29	8,715	31	11,874
Fruits and wine ..	26	2,288	54	6,533
Yerba mate	16	7,104	18	9,208
Poultry and small farms	—	—	15	2,962
Livestock	—	—	18	7,208
Dairy producers ..	315	17,896	407	32,228
Meat trade	—	—	15	3,952
Electric power ..	120	148,008	189	171,551
Transportation ..	—	—	66	3,301
Credit	96	73,143	113	95,079
Insurance	20	53,647	23	68,549
Consumer	115	147,214	226	283,059
Miscellaneous ..	102	30,872	126	20,397
Total	1,009	544,064	1,760	871,088

Source: Dirección Nacional de Cooperativas. Ministerio de Industria y Comercio.

¹ The basic exchange rate of 5 pesos to the dollar was used as the conversion factor.

gentine Cooperatives, and the Association of Argentine Cooperatives in Buenos Aires.

The legal status of the cooperative movement was not defined for decades—not until late in 1926, when Basic Law No. 11,388 was passed. With some modifications in the late 30's and early 40's, that law remains the basis for cooperative operations, even though it is considered to be outmoded under the present regime.

The 1926 law was patterned after laws in other countries and includes such provisions as one vote to each member regardless of the size of his business or number of shares of stock owned; no special advantages to management, old members, or directors; annual meetings; limitations on use of earnings; balance after payment of costs distributed in proportion to patronage; and prohibitions on use of the organization for political or religious purposes. By law, all cooperatives are independent organizations, subject only to fiscal review and control exercised by the National Direction of Cooperatives, a unit of the Ministry of Industry and Commerce.

The past few years have brought some interesting changes in numbers and types of cooperatives in Argentina. The consumer cooperatives, sponsored by the Eva Perón Foundation, have nearly doubled in membership, and the agricultural cooperatives have nearly trebled. Those classified as "miscellaneous" have been the only ones to decline; and this decline is probably the result of a reclassification of the groups. There are, of course, reasons for these changes that bear on any qualitative analysis of the cooperatives as an economic power group.

The Government has fostered the cooperative movement as one of its arms of economic control. The Second Five-Year Plan contains a decalogue of agrarian cooperation, citing the commercial and social aims of cooperation. While these aims are primarily subjective, they have been given force by various direct acts intended to stimulate and expand the cooperatives. These acts have made membership in cooperatives almost a necessity in some lines of activity. Cooperatives and their members are often given rebates or exemption from various taxes, including the gasoline tax and the 8-percent sales tax. They are used as channels for distributing farm machinery and spare parts. And they can get credit on advantageous terms through a special branch of the Banco de la Nación.

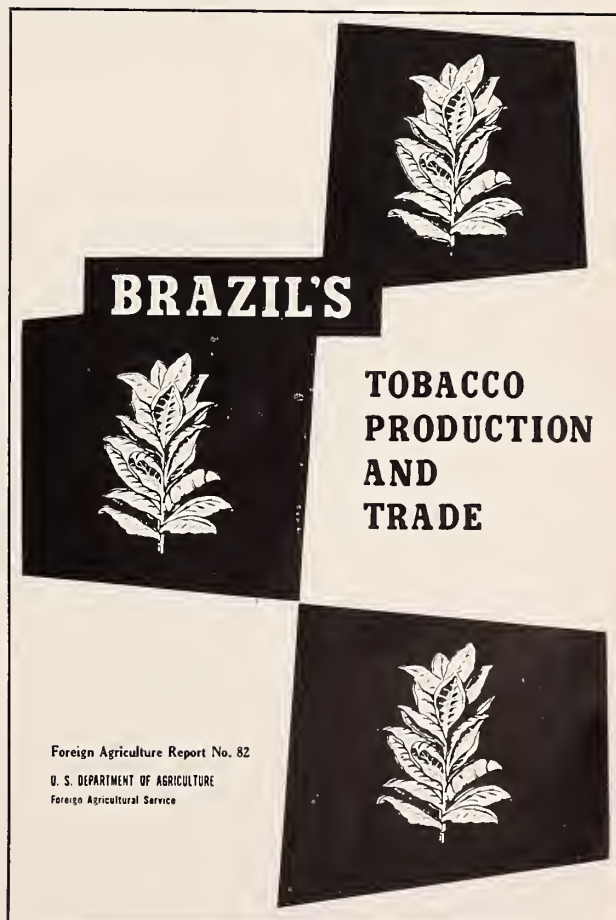
In 1954, agricultural cooperatives were made the

official arm for the collection of grain and distribution of sacks, seeds, fertilizers, and similar supplies for farmers. One effect of granting them such functions is to abolish or place under a heavy disadvantage the old-line grain and seed dealers who once had considerable social and political influence in some areas. In addition, the cooperatives' officers acquire strength as farmers' representatives in some branches of policy formation and implementation.

—CONSTANCE H. FARNWORTH,
Latin American Analysis Branch FAS, based on material supplied by Robert C. Tetro, U. S. Agricultural Attaché, Buenos Aires, Argentina.

New FAS Release

Brazil's Tobacco Production and Trade, written by James W. Birkhead after a recent trip to Brazil, was released in May 1955 as Foreign Agriculture Report No. 82, Foreign Agricultural Service, USDA. Copies can be bought for 15 cents each from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.





A highlight of the farm machinery show in Paris was this tractor that moved in low gear around and around the suspended circle.



By its trademark, France Œuf, the French Poultry Producers' Federation approvingly labels high-quality eggs.

Fair Stresses Quality

QUALITY was a keynote of France's 64th national agricultural fair, held in Paris this spring. This emphasis is a feeling, strongly held by many Frenchmen, that improving quality is the key to improving both domestic and foreign markets for French farm products. French efforts in this direction are of special interest to United States agriculture, which in recent years has been facing stiff competition for world markets in such products as wheat, meat, cheese, butter, and certain fruits and vegetables. During the same week as the fair, and across the street from it, the 27th international farm machinery show took place. Together the two events marked the "grand agricultural week of Paris," for which visitors came from all over the world, from the French Union, and from foreign countries. Exhibits from French North Africa and the West Indies added color and variety.

—HAROLD L. KOELLER,
Assistant Agricultural Attaché, American Embassy, Paris.



Canned fruit juices from French firms are displayed here.



Products from Tunisia are displayed beyond this archway. Exhibits from French overseas territories add an exotic touch to the fair.

France's Fair Stresses Quality



A highlight of the farm machinery show in Paris was this tractor that moved in low gear around and around the suspended circle.

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—HAROLD L. KOELLER,

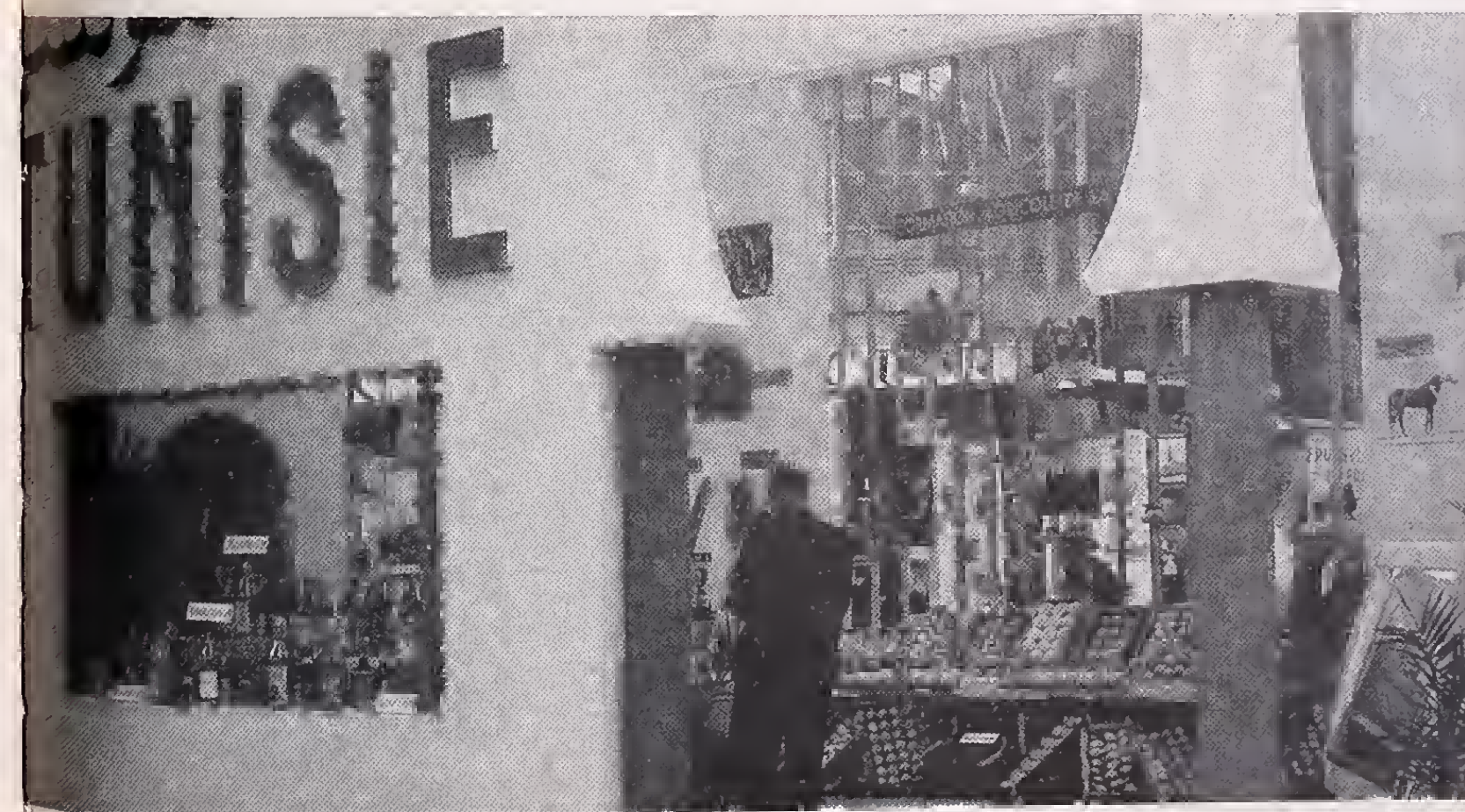
Assistant Agricultural Attaché, American Embassy, Paris.



Canned fruit juices from French firms are displayed here.



By its trademark, France Oeuf, the French Poultry Producers' Federation approvingly labels high-quality eggs.



Products from Tunisia are displayed beyond this archway. Exhibits from French overseas territories add an exotic touch to the fair.

Cacao—From Pod to Port

(Continued from page 111)

prevails in these two French territories, and prices may rise and fall during the season.

Nearly everywhere in the area, cacao beans must be moved from the villages to the buying stations of agents in the same way—along forest trails on the heads of West Africans or down or across streams in canoes.

Grading

The grading of cacao beans is normally a Government function in West Africa, and regulations vary by country.

In the Ivory Coast, the beans are graded only at port cities. In the French Cameroons, the Gold Coast, and Nigeria, the cacao is graded at interior collection points and again at the port of shipment. Samples are taken from each ton of cacao and inspected for the stipulated defects; then the percentage of such defects is computed and the grade determined. Usually, the defective beans are those that have germinated or that are moldy, slaty (unfermented), weevily, flat or decayed.

Only in Nigeria and the French Cameroons is the grower given an incentive to produce high-quality cacao; in those areas, he is paid a premium on Grade I cacao.

Shipping

Bagged cacao beans are moved from the up-country receiving points to the seaports by rail, truck, or barge. There, they are stacked in large storage sheds to await final inspection, check weighing, and shipment to overseas markets. In West Africa the busy shipping season runs from November to April. During these months in the Gold Coast alone, 1,000 tons of cacao beans is not an uncommon day's loading.

Outlook

The prospects for substantially increased supplies of cacao beans from West Africa in the near future are not encouraging. Swollen shoot virus, black pod fungus, and capsid insects, unchecked for years, are making serious inroads into annual production. By and large, new plantings have not kept pace with the retirement of old trees in the past decade. Well aware of these conditions, the governments of the

West African areas are now making concerted efforts through agricultural research and extension to curtail diseases and pests, rehabilitate old cacao farms, introduce more vigorous, higher yielding varieties, and extend plantings.

Any significant increase in production in West Africa depends on the success of these improvement programs. But with the cacao industry so largely in the hands of peasant farmers, who are not inclined to subject themselves to the disciplines of good farm practices, progress may be expected to be slow.

With such a production outlook in West Africa, the United States now looks to the Western Hemisphere, the home of cacao, for increased supplies. United States manufacturers, acting through the American Cocoa Research Institute, are promoting higher yields and more plantings. Outright grants have been made to the Inter-American Institute of Agricultural Sciences at Turrialba, Costa Rica, which devotes much time to cacao research and training of technicians. Close cooperation has also been given the Foreign Operations Administration on cacao projects in Costa Rica, Colombia, Cuba, Brazil, and other countries, all pointed toward increased production of a commodity for which the world has been exhibiting increased demand in recent years.



Bagged cacao beans are swung from lighter to ship at Takoradi, Gold Coast, British West Africa. Over half of the Gold Coast's cacao is shipped from this port.

Prospects for U. S. Dairy Exports to the Middle East

By C. S. STEPHANIDES

Dairy products from abroad have been moving into the Middle East in ever-increasing volume in recent years, partly because the expanding oil industries of the area provide most of the countries with hard currency. On the whole, too, the countries' own currencies are stable, and the purchasing power of the average citizen is improving.

Between 1938 and 1952, the quantities of dairy products imported by the Middle East from the United States alone showed the following startling increases: Butter, 200 percent (to a total of 18,000 pounds); evaporated milk, 411 percent (to 138,000 pounds); infant and dietetic food (milk base), 1,024 percent (to 236,000 pounds); cheese, 4,650 percent (to 95,000 pounds); and dried milk, over 92,000 percent (to 26 million pounds). And in 1952, Middle Eastern imports of U. S. malted milk and ice cream powder—two products relatively new in our trade with that region—reached 109,000 pounds and 201,000 pounds, respectively.

Even with these unusual percentage increases, the dairy products that the Middle East imports from the United States amount to only a small fraction of its total dairy imports. It is interesting to note that the increases came during a period when competition from other exporting countries was strong and our commercial and political relations with most Middle Eastern countries were not of the best. And our share in this rapidly expanding market has grown without our having made any special effort through advertising and demonstration in the Middle East.

From the figures just given, it is clear that the people of the Middle East appreciate the value of dairy products, and that those who can afford them consume them in large quantities. Many of their habits of cooking and eating are based on the use

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Exports of principal dairy products to Middle Eastern countries, total and from the United States, 1938 and 1952¹

[In thousands of pounds]

Source	Butter		Cheese	
	1938	1952	1938	1952
United States	6	18	2	95
All countries	35	1,178	860	3,108
	Canned milk		Dried milk	
	1938	1952	1938	1952
United States	27	138	28	26,000
All countries	262	7,909	85	37,580

¹ Includes Arabian States, Bahrein, Iran, Iraq, Israel, Lebanon, Syria, Aden, Cyprus, and Egypt.

of dairy products, and most common dishes contain these products in one form or another. However, United States exporters must realize that to gain increased acceptance in the Middle East, the products they offer must fit into the consumption patterns already established there. For traditional Middle Eastern dairying methods result in certain flavors, colors, and textures that are important in Middle Eastern cooking.

The Dairy Industry in the Middle East

The Middle Eastern countries are traditionally livestock countries. In most of them the nomadic and the semisettled ways of life are still followed by large groups of the population and the dairy animals move with the seasons and the vegetation. Although the livestock population is large, milk production is seasonal and comparatively small. Most of the milk is produced by ewes and goats, whose spring lactation period is very short. Cattle are kept mainly for work; what cow's milk is produced is also seasonal, depending on the quantity and duration of the spring vegetation.



In these clay vessels, yogurt and butter are stored in the Middle East. In them, too, yogurt is often churned: two men, facing each other across the vessel, rock it to and fro by its handles.

Under nomadic conditions, the handling of dairy products is extremely difficult, especially since both transportation and cold-storage facilities are very limited. To take care of the milk when the sheep, goats, and cattle move to their summer pastures in the mountains, movable cheese-making equipment is often transported by pack animals traveling behind the flock. It is easy to see that getting milk and milk products to the towns and cities presents a serious problem. At present but a few of the large cities in the area have dairies, and these only partly supply the needs of the city people. As a consequence of the seasonal milk supply—a 4-month surfeit in the spring, followed by a 8-month scarcity—the price of milk fluctuates violently.

Middle Eastern Dairy Products

Milk. Middle Eastern methods of preserving, manufacturing, and marketing dairy products may appear rather wasteful and even unsanitary compared to our standards. But they are the most efficient and economical methods possible under the

conditions prevailing in this part of the world. And Western sanitation standards need not all apply where consumption habits are so different. For example, there is no need for pasteurization if milk is never consumed raw, but invariably boiled before consumption. In the Middle Eastern countries, milk is always boiled before it is made into butter, cheese, or fermented-milk products like yogurt; and even when it is to be used as a cold drink, it is always boiled first and then cooled. In these countries, too, milk is always stored in the form of yogurt, an unfavorable medium for pathogenic bacteria. In short, the boiling of milk is a long-established household and dairying custom, to which pasteurization could add nothing of value. In fact, in Iran I often saw people boiling pasteurized milk before making it into yogurt or using it with coffee, chocolate, or tea.

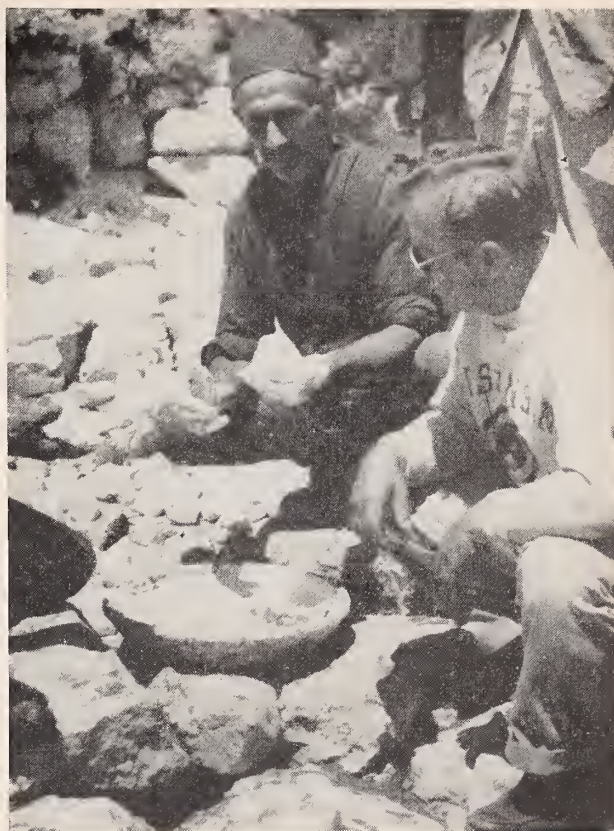
Butter. When milk is in surplus, it is made into yogurt and either consumed directly or collected in large containers and left to ferment. When ready for churning, it is put into barrel-shaped wooden churns, goatskin churns, or urn churns, which are operated by hand. During the churning, warm water is added to hasten the rise and separation of the fat from the fermented milk, and near the end of the process, cold water is added to speed the collection of the butter. After the butter is all collected, it is washed with cold water several times, salted, and stored in a cool place until it is marketed or consumed. If it cannot be marketed while fresh, it is usually boiled down and stored in goatskins or in tin or wooden containers, to be marketed as ghee. Often the butter is mixed with fat from the fat-tail sheep or with other fat, and sold as ghee. If ghee is properly protected from external contamination it will keep without refrigeration for a year or more without altering its flavor. As a rule, however, adulteration with other fats reduces its keeping qualities.

Ghee. Boiling butter down to make ghee may sound simple to those of us who are not acquainted with the processing methods and the factors that contribute to the characteristic color, texture, and flavor of ghee. But ghee is not just ordinary creamery butter without its moisture. The butter used is the Middle Eastern type, made from yogurt, or fermented milk, which gives it an acid flavor. It also has a large salt content—as much as 5 percent (which does not, however, influence the flavor of

the ghee). This acid salted butter is boiled, both to eliminate the moisture and to kill the bacteria that would prevent its storage under prevailing conditions. In the process of boiling, the salt settles to the bottom, along with the casein and foreign particles, and thus the end product has a clear amber color. While the butter is boiling, considerable scum is removed from the top. When the bubbles begin to thicken, the container is removed from the fire and the ghee allowed to cool and settle before being poured into containers for marketing. If the casein does not completely settle, or if enough time is not allowed for the settling process, or if the scum is not removed, the end product will be dark or brown. And if not properly cooked and slowly cooled, the ghee may not have the correct granular texture. These three factors—flavor, color, and texture—are important to consider in making ghee and in establishing permanent consumers.

Buttermilk. Sun-dried buttermilk is another dairy product popular in the Middle East. The liquid left after butter-making is boiled until it curdles, strained, and rolled into small round balls, which are then salted and dried in the sun. These sun-dried balls keep indefinitely in a dry place. The nomadic family uses them as needed, or sells them during the winter when other dairy products are scarce. When buttermilk is desired, the hard little balls are dissolved in warm water by being rubbed against the sides of the container. This reconstituted buttermilk is used, especially with cereals, in making soups, drunk as a beverage, or eaten with bread.

Cheese. When there is sufficient fresh milk it is poured into large containers and heated to about 95° F.; then rennet, saved from the stomachs of young milk-fed lambs, is added. When the milk coagulates, the curd is ladled into ring-shaped wooden forms about 4 feet long, 2½ feet wide, and 8 inches deep, which have been placed on a coarse cloth on a drain table or rack. When the curd is firm enough, it is cut into blocks and dry salt is rubbed on the surface. Later the same day the blocks are turned and salted again. The following day they are cut into slices about an inch thick; these are salted and then packed in tight wooden kegs holding from 25 to 150 pounds, or in 4-gallon tins formerly used for kerosene or benzene. The cheese is usually kept in cold storage or cool basements. It is ready to eat in about a month, but the



Sun-dried buttermilk balls are a popular dairy product in the Middle East. When they are dissolved in warm water, they become buttermilk again.

longer it stays in cold storage the better the flavor.

When the amount of milk is small, the cheese is made on a smaller scale. After the milk coagulates, the curd may be ladled into a cloth bag, which is twisted and worked occasionally to extract most of the whey, and then hung up to drain for a few hours or overnight. Cheese made in this manner is usually consumed fresh; less often, it is salted and packed in containers. Nomadic families usually make this kind of cheese for their daily needs.

Cheese is also made by simply straining yogurt through a bag to the consistency desired. Such cheese has to be consumed fresh.

When people are far back in a mountainous area and have no cold place to store cheese, they convert their surplus milk into hard cheese—similar to Swiss cheese or “toulomi” cheese—and pack it in goatskins. Such cheese keeps well in the mountains, and when the flocks are ready to migrate to the plains from their mountain grazing areas, it is

transported on muleback or horseback to the towns and cities.

The people of the Middle East have many ways of using milk and its products in their cooking. For example, boiled milk is often used with coffee, chocolate, cocoa, and tea, and also in cooking rice and in making several kinds of puddings and other starchy dishes from cereal flours. Yogurt is eaten with pilav, sliced cucumbers, cereal and vegetable soups, sugar, and honey, and in many other ways. One of the most popular summer beverages is sour buttermilk, sold in bulk or in bottles. But bottled sour buttermilk is expensive because bottles are scarce. In most of the Middle East countries the beer bottles left behind when the war ended are helping to fill this need.

Traditional tastes and greater purchasing power are combining to make Middle Eastern consumers more and more interested in buying dairy products. Here are some ways in which we might increase their desire for ours:

1. Demonstrations of the various ways to use whole and nonfat dried milk, such as in making yogurt, white soft cheese, and cultured buttermilk beverage; in preparing rice pudding, starchy and creamy products, and Middle Eastern pastries; and in serving coffee, cocoa, and chocolate drinks. These demonstrations might start with local institutions, such as hospitals, orphanages, and high schools. They might be held also for dealers in dairy products and for makers of confectionery.

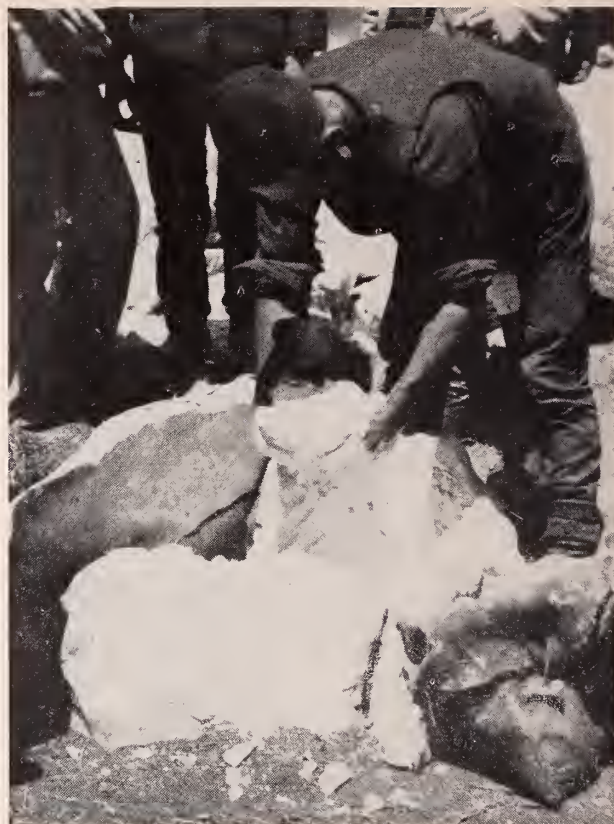
2. Preparation of ghee from low-grade butter with mixtures of other cooking fats suitable to local tastes and cooking methods.

3. Special packaging of both ghee and powdered milk so that their containers, when emptied, could be used by the consumer for storing other food-stuffs. While in Iran, I saw dried-milk containers being used in the homes of dairy farmers who bought the dried milk solely to get the containers.

4. Insertion of occasional advertisements in local papers, showing the prices and uses of dried-milk products.

5. Joint research with local bottled-beverage plants on using powdered milk as a beverage and marketing it through the plants' own established marketing facilities. In most Middle Eastern countries, alcoholic drinks are forbidden, and bottled buttermilk made from dried milk will be readily acceptable.

6. Selection of an attractive and easily remem-



Hard cheese keeps well in goatskins. In the remote mountainous areas of the Middle East, much of the surplus milk is made into hard cheese, which can be kept without cold storage for the months between trips to markets.

bered trade name for United States dairy products. If possible, all the dairy products we export to Middle Eastern countries should be marketed there under this trade name, with instructions in the local languages.

7. Provision of credit facilities and an attractive margin of profit to the local dealers, and occasional conferences with them to discuss marketing problems and to find out ways and means of increasing consumption.

Establishing pasteurization plants or milk reconstitution plants does have merit for many areas. But the marketing of our dairy products in the Middle East need not await the establishment of such plants. What is essential is a careful study of local consumption habits and local marketing methods, including the forms in which dairy products finally reach the consumer. Any new plant or scheme which would raise the cost of the product could restrict consumption instead of encouraging it.

Prickly-Pear Control in Australia

The prickly pear was brought to Australia from the Americas (probably from Florida and Texas) in the early 1800's, and used as a hedge plant. But it got out of control; and by 1925, its peak year, it was affecting more than 60 million acres in East Australia, mostly valuable agricultural and grazing land. Of the 60 million, 30 million were so densely covered by pear as to be useless. Only by the help of another immigrant from the Americas—a cactus-feeding moth from Argentina—did Australia finally manage to bring this land back into production. And that has taken nearly 30 years.

Today, Queensland (which had more than 80 percent of the pear area) and New South Wales (which had the rest) are responsible for nearly a third of Australia's wheat, practically all its corn and sugar, and all its rice. And, with more than 60 percent of Australia's sheep and lambs, the two States furnish more than half of Australia's wool exports, and count heavily in its exports of mutton and lamb. With nearly 70 percent of the cattle

Much of the progress made in agriculture around the world has come from the exchange of plants and animals between countries. But sometimes the foreign area is so much more hospitable than the native country that the plant or animal flourishes unduly and becomes a pest. That happened in Australia with the rabbit; and it happened in Australia too with the prickly pear. The story of the prickly-pear battle in Australia is one of the classics of biological weed control. It shows that even on the occasions when agricultural exchange goes wrong, the area that gave the nuisance may also be able to give the cure.

population, these States are of major importance too in the production and exports of dairy products and of beef and veal.

In making its plans to control the prickly pear, the Australian Government found that to use poison or mechanical means to reclaim the vast regions captured by the prickly pear would be very costly—from \$11 to \$45 an acre. So the Government turned back to the Americas for insects or plant diseases that might eradicate this American pest. In 1920 the Commonwealth Prickly Pear Board sent entomologists to North and South America. They were to search for and study all insects attacking cacti; select the most promising and eliminate those likely to become pests themselves in Australia; and collect insect stocks for transportation to Australia. There the insects chosen were to be acclimated; then they were to be reared on a large scale and established in the field.

As the result of this research, about 50 species of cactus-feeding insects were forwarded to Australia. Outstanding among these was an Argentine moth, *Cactoblastis cactorum* Berg.

The first consignment of 3,000 *Cactoblastis* eggs was sent to Australia in February 1925, and there in September it produced only 1,070 moths. But by March 1927 nearly 8 million eggs were liberated in the field, and before the end of 1930 there were almost a billion and a half. At this point it was clear that no other insect was needed to do the job. And by the middle of 1931 the moth was so well



The prickly-pear cactus in southwestern United States. The prickly pear was introduced into Australia and became a serious pest there.

distributed throughout the infested area that no further distribution of eggs was necessary.

The rapid collapse of the pear was spectacular. Within a few months hundreds of square miles of country previously infested with dense, impenetrable prickly pear was swarming with hungry larvae and covered with rotting plants. By August 1932 more than 90 percent of the pear had been destroyed. As soon as possible the land was put under crops or heavily stocked, to prevent the pear from growing back. Though considerable regrowth did occur, the young plants were much more suc-

culent and less insect-resistant than the original pear. By 1935 *Cactoblastis* had mastered almost all the regrowth of the cactus also. From then on it was a question of settling and farming the liberated land.

Clearing the area by chemical and mechanical methods would have cost more than \$2 billion; clearing it with the help of the moth cost less than \$540,000—not even a cent per acre. —F. A. PERKINS, *Chief Lecturer in Entomology, University of Queensland, Brisbane, Australia.*

FAO: Cooperation for Productivity and Peace

(Continued from page 113)

Grass Roots Cooperation

In India I saw the work of one of our Dutch experts. In 34 villages he is training local boys how to flay and cure hides and skins. With simple, inexpensive equipment these boys are making highly acceptable products, which command much higher prices than the ones handled by old methods. At the same time they are converting to feed and fertilizers the carcasses which, under old methods, were left to become health hazards. Each trained boy teaches his skill to others in his village, and thus the skills spread. This particular activity is only one of many that aim at local advancement—an advancement that takes place at the grass roots and is therefore of tremendous significance in the waking world.

In Iraq I saw the result of 2 years' work, done with the help of an American technician, to develop better ways of processing, packaging, and marketing dates. Now a modern packing plant, built by the government, is turning out dates of high quality, which are readily absorbed by discriminating markets. Other plants are being erected and, like the one now in existence, will be operated by local people. Already, I am told, about \$3 million have been spent on equipment; but the cost to FAO has been little more than the expert's salary and allowances.

In the forests of Burma, teak has long been regarded as a major commercial species; but it con-



Logs are generally snaked from the forests of Southeast Asia by elephants. A rational exploitation of forests is the aim of many Asiatic countries—an aim that they are realizing with help from FAO.

stitutes only a small part of the total growing stock: many secondary hardwoods, referred to as "jungle" species, have remained comparatively unknown to commerce. One of FAO's men, an Austrian, has arranged for a selection of these species to go to Europe, where ways have been found

to treat the timbers to increase their durability in various uses. Besides, ways have been found to process otherwise valueless woods to make chip boards for inexpensive housing. Thus the use-value of Burmese and similar forests no doubt has been increased many times.

In Thailand the work done by an expert from Nationalist China has set the pattern for widespread culture of fresh-water fish, to provide much-needed protein in the diet of millions of people. Fish are now available, or can be made available, in ponds or even paddies in the hinterland; and this form of food has become common in areas where, because of inadequate transport facilities, it could not be had before.

Regional Cooperation

In the Far East as a whole, 14 countries have been cooperating since 1948 to improve rice culture by breeding good varieties, following effective cultural practices, and making good use of fertilizer. Besides the technical importance of this continuing

cooperation, two aspects of it are of special significance.

First, improved rice culture increases not only the possibility of producing enough rice of the desired type, but of ultimately making possible the production of the other crops required in a well-balanced agriculture. It is much the same prospect as has been realized in the United States, where, because of hybrid corn, enough corn is now being produced on 10 million fewer acres than were formerly required; the spared acres have been put to profitable use in other crops, notably in soybeans, and thus our agriculture has achieved a better balance among crops.

The second significant aspect of the rice program in the Far East is that in this work the participating countries have learned the advantages of cooperation and doubtless will be working together in other ways as well. Thailand, for example, having freed itself from the serious animal disease, rinderpest, is now seeking to cooperate with neighboring countries to control the disease over a much wider front.

A similar trend toward more regional cooperation is evident in the Near East, where a highly successful cooperative effort to control the desert locust is stimulating governments to join in combatting other pests or diseases, revegetating denuded areas, and improving nutrition.

From time to time, training centers are conducted in each of the several regions on subjects of common interest to member governments. The subjects cover a wide range: rural credit, irrigation practices, extension methods, mechanized equipment, home economics, logging methods, fish culture, statistics, and experimental design. The object of the centers is to give trainees the information and the skills they need to further the work in their own countries, under more localized conditions.

Through fellowships provided under the technical assistance work, trainees who show special promise have an opportunity to receive advanced training elsewhere, in subjects associated with special activities in their own countries.

Both forms of training entail international cooperation, both within each region and from the outside. At the regional training centers, talent from several countries is obtained to give instruction and guidance; and the trainees who receive

New Book on FAO

The Story of FAO, by Gove Hambidge, comes off the press, appropriately enough, on the 10th anniversary of the Food and Agriculture Organization of the United Nations. The author has brought to his book the wealth of his knowledge about the organization, for he has been with it since its beginning and is now its North American Regional Representative.

The book begins with a contrast between the life of a typical Egyptian peasant and the life of a typical farmer in the United States and then extends the contrast to take in the many tragic discrepancies that exist all over the world in such things as food supplies, quality of diets, health, and length of life. Against this setting the author traces the development of FAO and the philosophy that underlies it, going back even beyond the time of FAO's organization, back to the days when the League of Nations was dying and efforts were being made to salvage some measure of international cooperation in such spheres as food, agriculture, housing, child welfare, and education.

All in all, it is a comprehensive presentation, ably made, and spiced with intriguing photographs of far-away places.

Copies of the 303-page book can be obtained at bookstores or from the publisher, D. Van Nostrand Co., 250 4th Ave., New York 3, N. Y., at \$6.50. All royalties go to FAO.



A Far Eastern farmer harvests his rice crop. Perhaps tomorrow his rice paddy will be more productive than it is today; for already scientists in his and neighboring countries are working together under FAO to make it so.

fellowships of course travel to other countries for their special training.

Other forms of regional cooperation are reflected in such activities as those sponsored by the International Rice Commission, whose work in the Far East has already been mentioned, the Fisheries Councils, the Forestry Commissions, and many regional committees, working parties, and consultative groups. In these activities, individual governments themselves, assisted by FAO, formulate and then carry forward their own plans for improvement.

Worldwide Cooperation

Many activities of FAO are of worldwide significance. For example, FAO analyzes recent trends



Children in a Thailand village are examined by a Thai doctor and by a nutrition expert from FAO (right).

and developments in food and agriculture and broad economic factors. FAO has already done much and is doing more to provide several governments with improved statistical methods and bases for participating in the 1960 World Census. Appraisal of food consumption and the making of country food balance sheets are continuing activities, as are studies of the relation of supplementary feeding programs and development programs to the disposal of surplus food. Such activities provide pertinent background information that will prove useful in developing world improvement programs and services.

A specific example of worldwide cooperation is the Plant Protection Convention, which seeks to minimize the translocation of crop pests and thereby reduce losses. Service of this type is definitely in line with the interests of all countries, since all have experienced costly invasions by plant diseases and insect pests. I recall the elaborate precautions observed by the United States to protect itself against invasions of this sort and am heartened by the thought that these precautions are being fortified

by cooperation with other countries equally interested in the protection of crops.

Certainly not the least aspect of the worldwide cooperation that goes on in FAO, is the organization's widely accepted publications. They include yearbooks on agricultural production and trade, fisheries, and timber, besides the annual report, *The State of Food and Agriculture*. They include also periodicals such as *Unasylva*, devoted to forestry, the *Monthly Bulletin of Agricultural Statistics and Economics*, *Fisheries Abstracts*, and *Fisheries Bulletin*. In addition, the FAO technical divisions issue a series of studies and "development papers" in agriculture, nutrition, and many related fields.

Thus FAO, in which 71 countries join, is a medium through which the common problems of food and agriculture can be clarified by frank discus-

sion and attacked by concerted action. These problems, though basically alike, call for solutions which, because of various circumstances in various countries, are likely to be found only in the atmosphere of international cooperation.

Whatever any member country contributes in the way of inspiration and guidance in these efforts to improve agriculture throughout the world is, in a true sense, a reciprocation for the many things which that country's agriculture has derived from other countries. But it is more. It is a contribution toward a great objective—human welfare through the world, the one thing that is essential to the peace we all are seeking.

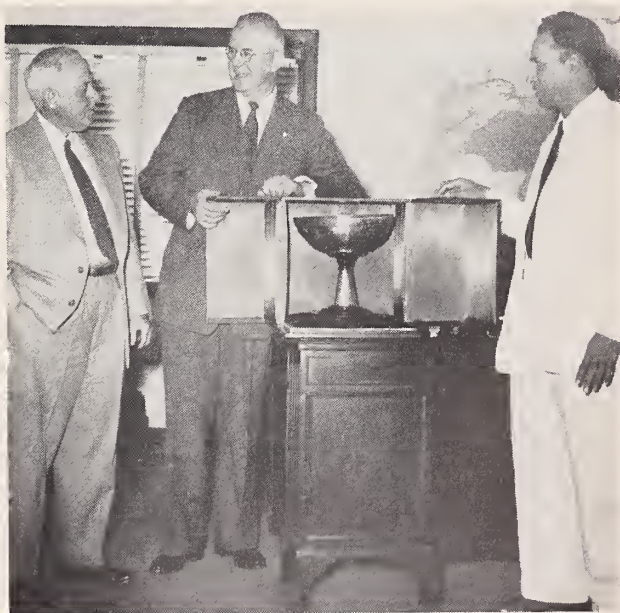
Is that objective too visionary? If you say that it is, then I ask in all sincerity, what other objective can free nations hold dear in discharging their great responsibilities to mankind?

Venezuela Presents Trophy To U. S. Cattle Breeders

In Caracas, Venezuela, this spring, Iván Darío Maldonado, Director of the National Association of Venezuelan Cattlemen, presented an embossed silver bowl to the Panamerican Zebu Breeders Association in San Antonio, Texas. The Association will award the trophy annually to the United States breeder whose bull that year is judged champion senior Zebu. A breeder who wins the bowl five times may keep it.

The bowl, which was hammered out by a silversmith in the Venezuelan town of Valencia, bears an inscription in both English and Spanish, which says that the trophy was presented to the Association "in the name of President Col. Marcos Pérez Jiménez of Venezuela in recognition of accomplishment and future efforts to create and maintain cattle especially suited for tropical countries."

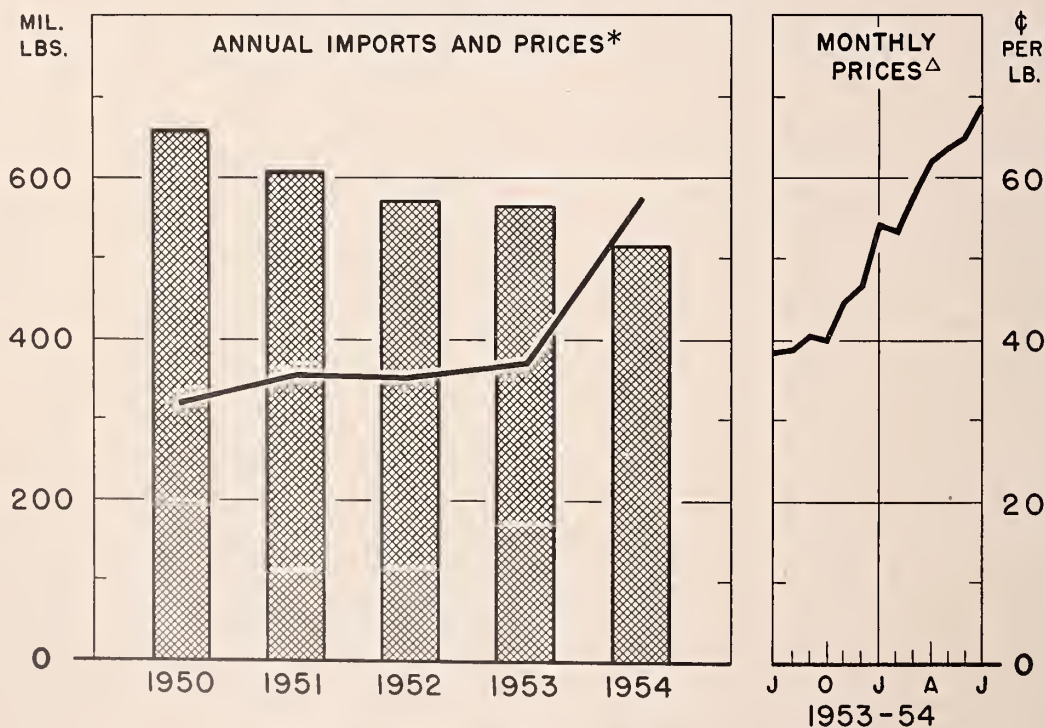
Mr. Maldonado, who established the trophy, is himself an experienced judge of Zebu cattle and served in that capacity at the cattle fair in San Antonio, Texas, in 1954. Zebus are already a popular breed in his country; and cattlemen there have been buying many of these bulls from us.



United States ambassador to Venezuela, Fletcher Warren (center), accepts, for the Panamerican Zebu Breeders Association, the trophy from Venezuelan Iván Darío Maldonado (right) while James H. Kempton, United States agricultural attaché to Venezuela, looks on.

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